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ABSTRACT

This study investigated the effectiveness of behavior modification techniques used in a 16-week summer remedial reading program for primary-level students. Ten elementary teachers enrolled in an introductory graduate course in diagnostic and remedial reading received eight hours of training in the use of behavior management techniques: establishing baseline data, identifying and using a nonmaterialistic reward system, and rewarding only the appropriate behaviors. Subjects, 28 students who had attended a reading clinic for four weeks and had received 20 hours of instruction, were assigned randomly to experimental and control groups. Control-group teachers instructed their students through the use of games, teacher-made materials, and commercially prepared materials, while experimental-group teachers, using the same instructional materials, added the use of behavioral reinforcers such as verbal and written praise, student-made graphs, wall charts, reading hardware, and free-choice reading. Data, revealing higher skill attainment for the experimental group, suggest that the remediation of specific skill deficiencies in reading is facilitated through the use of behavior modification techniques. (KS)

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Effective Remediation of Reading Skills Using Behavior Modification

Paper Presented at the
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What are the effects of applying behavior modification techniques on the remediation of reading problems of primary grade pupils? Will behavior modification increase the student's efficiency in a particular reading skill area?

In a recent article in The Reading Teacher, Harris (1976) identified three social factors which could account for why reading research has not had much impact on what happens in the schools. The social factors cited were the bandwagon effect, the pendulum swing, and the prevailing climate of opinion. Which of these could account for the apparent demise of behavior modification is difficult to identify. However, it is apparent from a cursory review of the literature that the popularity of behavior modification has waned.

The current lack of interest in behavior modification, and more specifically the theory on which it is based, is difficult to understand. Many reading authorities (Durkin, 1976; Spache, 1976; and Wilson, 1972) agree that both heredity and environment play important roles in learning to read. Since the influences of heredity are not highly amenable to changes by the teacher; then, teachers should logically focus on the instructional variables of reading with which they could be more effective in bringing about desired changes.

The use of behavior modification techniques in instruction requires the teacher to focus on specific learning behaviors and modify these behaviors in the appropriate direction through the use of a reward system (Meachum and Viesen, 1969). The area of reading instruction is readily adaptable to this suggested procedure because of the diagnostic tools reading teachers have at their disposal. Through informal and formal diagnosis, teachers can establish baseline data and develop a reward system to facilitate remediation.

The present study investigated the efficacy of behavior modification techniques with ten primary grade students enrolled in a sixteen week summer remedial reading program.

Ten elementary teachers enrolled in an introductory graduate diagnostic and remedial reading course received eight hours of training in the use of behavior modification techniques for reading instruction. The training consisted of developing the teacher's skills in (1) establishing reading baseline data using informal diagnosis, observation, and past performance; (2) verifying baseline data with the use of individual diagnostic tests; (3) identifying and using a reward system which is readily available and minimizes the use of materialistic rewards; (4) providing direct application for the skill concurrently with remediation; and (5) rewarding only the appropriate behavior.

The teachers were all employed in local school systems within a twenty five mile radius of Fort Wayne, Indiana. The mean years of teaching experience at the elementary level was 4.7, with no teacher having less than 2 years of teaching experience. Role playing situations and mastery exams were used to instruct and assess the teacher's competence with the use of behavior modification, respectively. These data and observations collected by the investigator supported the assumption that the teachers possessed the knowledge and ability to apply the behavior modification techniques for remedial reading instruction purpose.

The subjects were 28 primary level students attending a summer remedial reading clinic and were instructed by inservice teachers working toward a reading specialist degree. The clinic was supervised by two reading clinicians and the students were taught on a one-to-one basis. All of the subjects had attended the clinic for four weeks and had received twenty hours of

individual instruction prior to their assignment to a control or experimental group.

Twenty subjects were randomly selected and ten subjects were randomly assigned to an experimental and a control group. These subjects were then randomly assigned to individual teachers within each group. Following the assignment of subject to teacher, both the control and experimental teachers established baseline data for their subject. To minimize the effect of inaccurate baseline data the investigator reviewed all of the diagnostic findings to verify that the reading skill identified for remedial instruction was, in fact, a reading skill deficiency.

Following the establishment of baseline data the control teachers instructed their subjects through the use of games, teacher-made materials, and commercially prepared materials. These teachers followed their regular program of instruction which consisted of remedial reading instruction related to the established baseline data. No specific provisions were made to reinforce appropriate learning, and behavior modification techniques were not employed by the control teachers. The experimental group was instructed with similar and identical materials in addition to the use of the behavior modification techniques. Figure 1 presents an example of establishing baseline data and monitoring pupil's progress.

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insert figure 1

The teachers using the modification procedures were observed daily to ensure that the treatment was administered and only appropriate reading behavior was reinforced. Because the reward systems used to reinforce appropriate learning behavior were to minimize materialistic gain and

concurrently provide application of the reading skill, several procedures which accentuated positive reading growth were used. Among the reward systems identified and used by the experimental teachers were verbal praise, written praise, student-made graphs, wall charts, use of reading hardware, and free choice reading.

Verbal and written praise was incorporated in all instructional practices as often as possible. If the student was responding orally the modification teacher was to ignore all inappropriate responses and verbally praise only the correct response. The same procedure was followed with written activities except the praise was recorded on the student's work. In addition, a short summary of what the child had learned and accomplished was used at the end of each instructional session. This summary was intended to help the children better understand what they had learned, how this learning would help to improve their reading skills, and nurture an attitude of self achievement and success in reading. Although it was difficult to statistically verify the effect that the summary period had on the children, several parents indicated that their child was able to better discuss with them what they had learned, as well as exhibiting an improved attitude about coming to the reading clinic.

A typical reward system used by several of the behavior modification teachers relied upon the students monitoring their own progress. Two examples of this system were the use of charts and wall pockets. Student charting of their own progress was emphasized with reading skills which dealt with the Dolch Words, comprehension, and reading rate. For example, the total number of Dolch Words correctly identified during each instructional period were marked daily on the student's graph. During discussion periods about interpretation of the graph the teacher emphasized that the student was competing with himself and that an upward trend indicated improvement.

A similar procedure was used with small pocket charts in which the words correctly identified were placed in the appropriate pocket and the number of the words in the "Words Correct" pocket were recorded on a daily basis.

Hardware such as the Language Master and the audio recorder were also used to reward appropriate behavior and better utilize application of the reading skill learned. Sight words which the child had learned were used in context on the Language Master to serve both as a reward for appropriate learning and provide for application of the skill. Also, the audio recorder served as a reward system, as well as being used to present examples of words in context, record responses to comprehension questions, record daily progress of the students, and record short language experience stories.

It is important to note that the aforementioned charts and other reward systems were for individual students and that a student was in competition with only himself. The charts used for recording student progress were never displayed in the classroom or compared with those of other students in the program.

Following ten hours of instruction the subjects were administered a post-test and returned to the regular program. Tables 1 and 2 present the findings for the experimental and the control group between pre- and posttesting. Significant differences ($p<.001$) were noted for the experimental subjects and all of these subjects exhibited positive growth in the area of remediation. The control group did not reflect a significant difference ($p<.09$) in remediation at the .05 level of significance. Although it should be noted that seven of these subjects did exhibit positive reading skill improvement, it is important to consider that the control group teachers had all received advanced training in diagnosis and remediation, compared with the experimental group teachers who were taking their first course in diagnosis and remediation.

insert table 1

insert table 2

The result of this study suggest that the efficacy of remediation of specific reading skill deficiencies with primary level students is improved through the use of a behavior modification technique. The modification technique used does not have to incorporate a reward system which is materialistic in nature, i.e., candy, tokens, etc., but can rely upon a reward system which is readily available and emphasizes application of the reading skill learned. The use of charting, stop watches, verbal and written praise, and reading hardware proved to be sufficient reinforcers of the desired reading behaviors. In addition, the use of behavior modification appears appropriate for use with a wide variety of reading skill areas as evidenced by the range of skills which were identified as requiring remediation.

It is recommended that further research be conducted to identify a wider variety of reward systems which are (1) available to most teachers in a regular classroom; (2) effective for promoting either long term or short term reading skill development; and (3) conducive to developing intrinsic motivation for reading skill improvement, reading interests, and desire to read.

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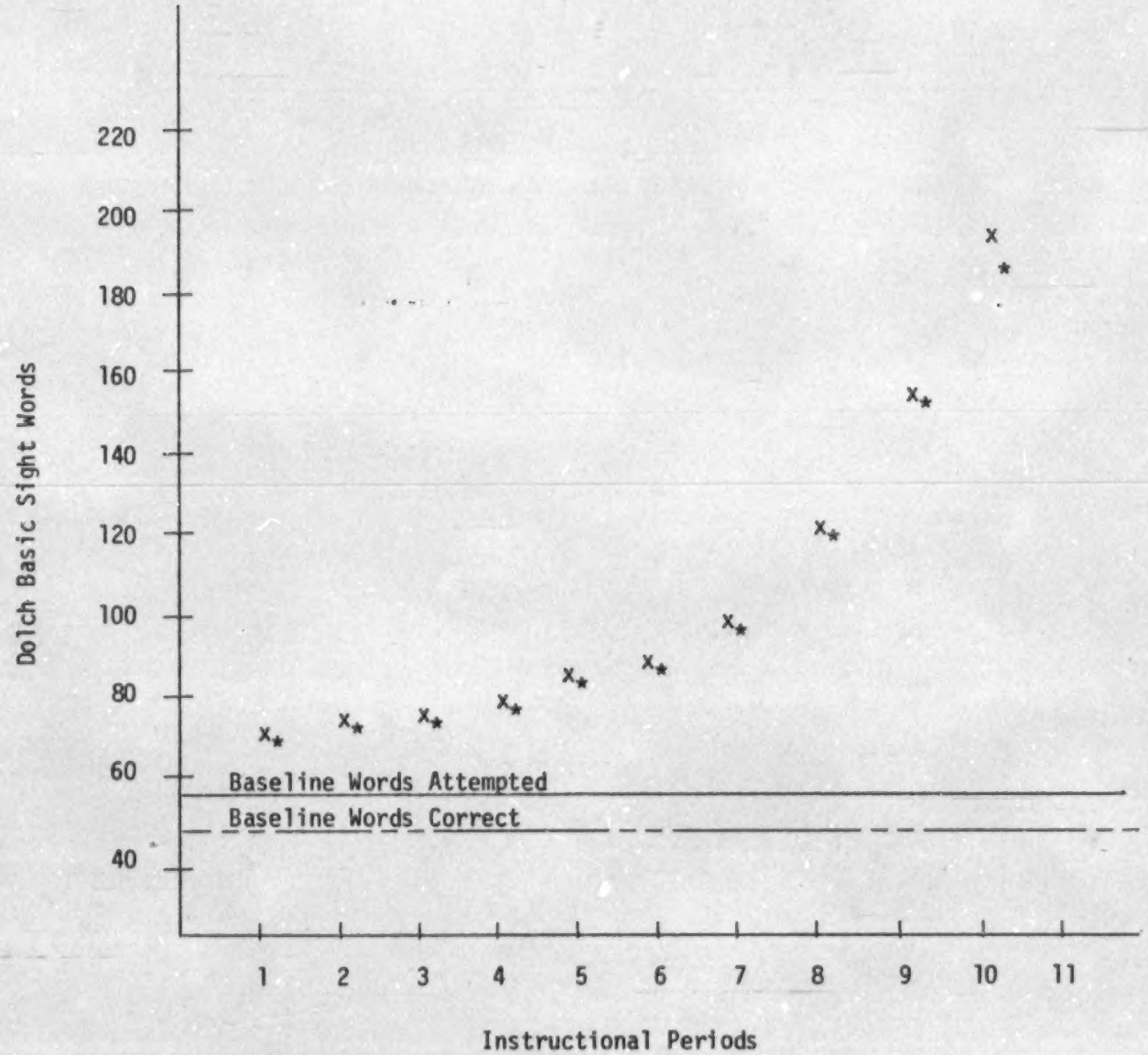

Figure 1

Example of established baseline data and pupil's progress with behavior modification techniques

Table 1

Test of Significance with Pre- and Posttest Data
for the Experimental Group (N=10)*

Subject	Reading Skill Instruction	Pretest Mean	Posttest Mean	Sign
1	Consonant Blends - Incorrect	17.6	4.75	+
2	Comprehension - Literal Questions Correct	76%	92%	+
3	Vowel Diagraphs - Words Correct	33.62	48.43	+
4	Sight Words (Dolch Lists)	56.00	165.00	+
5	Sight Words (Dolch Lists)	50.00	90.00	+
6	Sight Words (Dolch Lists)	183.00	206.00	+
7	Sight Words (Dolch Lists)	27.00	56.00	+
8	Phonics Analysis - Words Correct	10.00	26.00	+
9	Words Per Minute (Reading Rate)	72.60	119.25	+
10	Sight Words - Correct	21.00	46.00	+

N = 10
$\underline{X}$ = 0
*p < .001

Table 2

Test of Significance with Pre- and Posttest Data for the Control Groups (N=10)*

Subject	Reading Skill Instruction	Pretest Means	Posttest Means	Sign
1	Letter Identification	14.00	26.00	+
2	Sight Words (Dolch List)	31.00	31.00	o
3	Sight Words (Dolch List)	65.00	92.00	+
4	Sight Words (Dolch List)	46.60	68.33	+
5	Sight Words (Dolch List)	120.00	116.60	-
6	Whole Word Identification	14.00	18.00	+
7	Beginning Consonant Sounds	12.00	31.00	+
8	Consonant Blends - Correct	16.00	14.00	-
9	Comprehension - Literal Questions Correct	40%	80%	+
10	Phonic Analysis - grapheme/ phoneme correspondence	8.00	14.00	+

N = 9
$\underline{X}$ = 2
*p < .09